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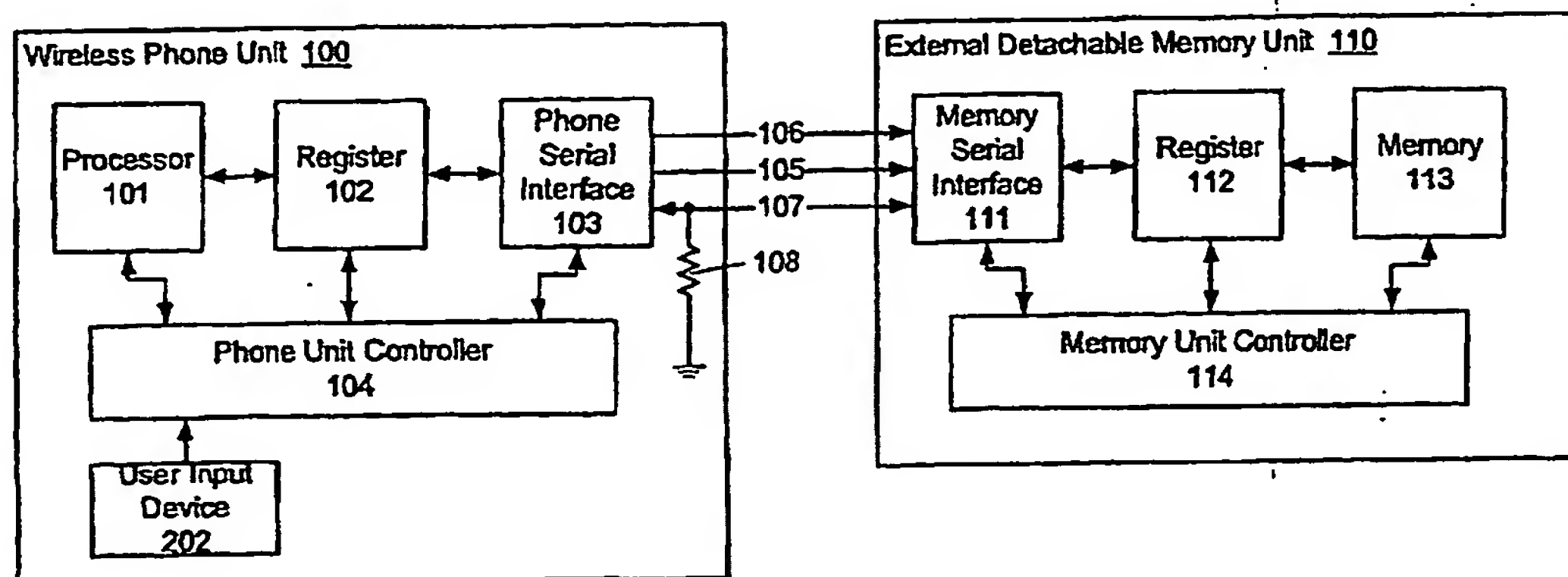
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(54) Title: PERIPHERAL MEMORY DEVICE FOR A WIRELESS PHONE AND METHODS OF IMPLEMENTING AND USING SAME



(57) Abstract: A wireless telephone unit includes a serial interface to which memory stick units can be selectively connected. Each memory stick unit includes a serial interface, data register and memory unit. By using one or more memory sticks for auxiliary data storage, the wireless telephone unit can provide a host of functions not available with conventional wireless phones. For example, the wireless telephone unit and memory stick combination may provide expanded contact and schedule information storage that is easily transferred between phones. The wireless telephone unit may also become a personal audio device providing music or other audio programming that is recorded on a memory stick unit.

TITLE OF THE INVENTION

Peripheral Memory Device for a Wireless Phone and
Methods of Implementing and Using Same

5 FIELD OF THE INVENTION

The present invention relates to the field of
wireless telephony. Specifically, the present
invention relates to the field of auxiliary electronic
memory for data storage in connection with a wireless
10 telephone unit. More specifically, the present
invention relates to a peripheral memory device
integrated into a wireless telephone unit to provide
unrestricted amounts of memory for use with the basic
functions of the phone unit as well as expanded
15 functions not available with conventional wireless
phones.

BACKGROUND OF THE INVENTION

The advent of wireless telephony has drastically
20 improved the convenience and prevalence of
telecommunications in modern society. With a wireless
telephone unit, a user can take or make phone calls
from virtually anywhere within a service area supported
by the user's service provider. With agreements
25 between service providers, the user may additionally be
able to use his or her phone to communicate from
anywhere within a large geographic region.

With a wireless telephone, a user need never waste
time looking for a phone to place a call. Moreover,
30 the user can take advantage of time that would
otherwise be wasted, for example, while traveling,
driving or walking, to take or place a phone call.
Modern wireless phones are conveniently sized and
produced with compact, ergonomic designs to facilitate
35 being carried by a user.

Additionally, modern wireless telephones provide more functions beyond basic telephone service. For example, most wireless telephones can store a directory of names and telephone numbers from which the user can
5 select to place a phone call. More advanced wireless phones may also provide internet access, e-mail or even simple video games.

A more recent trend is to incorporate the functions of a personal digital assistant into a wireless phone.

10 A personal digital assistant (PDA) is a palm-top computer programmed to receive and store schedule information, memorandums, messages and other information for a user.

The extent to which these additional functions can
15 be added to a wireless phone unit are restricted by the amount of memory the wireless phone unit has. If the memory available to the phone unit were unlimited, many additional features not presently available could be provided in a wireless telephone unit.

20 Consequently, there is a need in the art for a method and device for expanding the data storage available to a wireless telephone unit so as to allow that phone unit to provide a variety of additional features and functions.

25 SUMMARY OF THE INVENTION

It is an object of the present invention to meet the above-described needs and others. Specifically, it is an object of the present invention to provide a
30 method and device for expanding the data storage available to a wireless phone unit so as to allow that phone unit to provide a variety of additional features.

Additional objects, advantages and novel features of the invention will be set forth in the description
35 which follows or may be learned by those skilled in the

art through reading these materials or practicing the invention. The objects and advantages of the invention may be achieved through the means recited in the attached claims.

5 To achieve these stated and other objects, the present invention may be embodied and described as a wireless telephone unit including one or more detachable memory units, each of which includes a first interface for selectively connecting the detachable
10 memory unit to the wireless telephone unit. A port on the wireless telephone unit includes a second, corresponding interface for connection with the interface of a detachable memory unit when that detachable memory unit is received in the port. Each
15 of the detachable memory units house a memory device in which data from the wireless telephone can be stored and retrieved via the connection of the first and second interfaces described above.

 Preferably, the wireless telephone unit of the
20 present invention also includes a commercial-band radio tuner for receiving broadcast radio signals. The telephone unit may be used to selectively record audio programming from the broadcast radio signals in one of the detachable memory units connected to the wireless
25 telephone unit.

 Additionally or alternatively, the wireless telephone unit of the present invention may include a connector for connecting the wireless telephone unit to an external audio signal source, such as a stereo or
30 compact disc player. An audio signal representing audio programming is received from the external audio signal source and recorded by the wireless telephone unit in one of the detachable memory units connected to the wireless telephone unit.

A headset may be connected to the wireless telephone unit for listening to the audio programming recorded in the detachable memory unit or units. In this way, the wireless telephone unit can act as a
5 personal audio device.

Preferably, the wireless telephone unit of the present invention also includes a user input device with which a user can control the wireless telephone unit to selectively record telephone conversations
10 conducted on the wireless telephone unit in one of the detachable memory units connected to the wireless telephone unit. Similarly, the wireless telephone unit may record voice memos created by the user or voice mail messages, received when a user is unavailable to
15 take an incoming phone call, in one of the detachable memory units connected to the wireless telephone unit.

The wireless telephone unit the present invention may also include a connector for connecting the wireless telephone unit to an external electronic
20 device containing an image or text data item, such as a computer text file, digital photograph or facsimile image. The wireless telephone unit receives the data item through the connector and stores the data item in one of the detachable memory units connected to the
25 wireless telephone unit. The wireless telephone unit may then wirelessly transmit the data item from the detachable memory unit over the wireless telephone infrastructure.

Conversely, the wireless telephone unit may
30 wirelessly receive an image or text data item over the wireless telephone infrastructure and store the data item in one of the detachable memory units connected to the wireless telephone unit. In such a case, the telephone unit may preferably include a connector
35 through which the wireless telephone unit can download

the data item from the detachable memory unit to external electronic equipment for further processing.

The present invention also encompasses a method of managing data with a wireless telephone unit

5 corresponding to the capabilities of the wireless telephone unit described above. This method of the present invention manages data by recording that data, transmitted from the wireless telephone unit, in one or more detachable memory units, each of which includes a
10 first interface for selectively connecting the detachable memory unit to a port on the wireless telephone unit.

The method may also include entering data through a user input device of the wireless telephone unit to
15 create a database desired by the user. When necessary, the method then includes disconnecting the detachable memory unit in which the data is stored from the original wireless phone unit and plugging that detachable memory unit into a second wireless telephone
20 unit to effectively transfer the data from the original wireless telephone unit to the second wireless telephone unit.

BRIEF DESCRIPTION OF THE DRAWINGS

25 The accompanying drawings illustrate the present invention and are a part of the specification. Together with the following description, the drawings demonstrate and explain the principles of the present invention.

30 Fig. 1 is an illustration of a wireless telephone unit according to the present invention.

Fig. 2 is a block diagram of a wireless telephone unit and an external detachable memory unit according to the present invention.

Fig. 3 is a block diagram of a wireless telephone unit and an external detachable memory unit, similar to that pictured in Fig. 2 according to the present invention, with additional features provided in the phone unit.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The present invention involves the use of self-contained, interchangeable memory units, called memory sticks, that can be connected to or inserted in a wireless telephone as needed to provide virtually unlimited memory for the phone unit. Using the drawings, the preferred embodiments of the present invention will now be explained.

As shown in Fig. 1, the present invention may be implemented in a wireless telephone unit (100). Like conventional wireless telephone units, the phone unit (100) of the present invention incorporates a radio transceiver (not shown) which communicates through an external antenna (209) with the wireless telephone infrastructure of a service provider. With radio frequency signaling, the phone unit (100) can thus provide telephone service through the service provider's system.

A speaker (210) is provided to allow the user to hear the incoming audio of a phone call. A microphone (213) allows the user to speak into the phone (100) in response and thereby conduct the telephone call.

A user input device (212) allows the user to control the phone unit (100). The user input device (212) may include a keypad with which the user can enter data or commands to the phone (100).

Additionally or alternatively, the user input device (212) may include, for example, a trackball, a dial, a rotating shuttle or any other user input device. A

display device (208) is also provided on the phone (100) to facilitate data and command entry.

The phone unit (100) of the present invention also includes a port (201) for receiving a memory stick (110). The memory stick (110), which will be described in detail hereafter, is a self-contained electronic memory unit that provides additional data storage capacity when connected to the phone unit (100) through the port (201). An unlimited number of memory sticks (110) may be used with a given phone unit (100) to provide the phone unit (100) with as much data storage capacity as necessary.

Preferably, the memory stick (110) can be manually inserted into and removed from the port (201) by the user. In other words, the memory stick (110) is simply plugged into the port (201) and held there by friction. A latching mechanism (not shown) may be included for securing the memory stick (110) in the port (201) until released by the user.

Fig. 2 illustrates, in block diagram form, the relevant circuitry of the phone unit (100) and the memory stick (110). As shown in Fig. 2, the wireless phone unit (100) includes a processor (101). The processor (101) controls and processes the data necessary to support the features available on the phone unit (100) and can, as needed, store and retrieve that data to and from the memory stick (110).

A serial interface (103) is provided for electronic communication between the phone unit (100) and a connected memory stick (110). This interface (103) will be located in, or connected to, the port (201) that receives the memory stick (110). Between the processor (101) and the serial interface (103), a register (102) buffers the data being transferred between the processor (101) and the interface (103).

A phone unit controller (104) is provided to control and coordinate the operation of the processor (101), register (102) and interface (103). Input from the user input device (202) is fed to this phone unit controller (104) to allow the user to control the phone (100) and access its features.

The memory stick unit (110) has a similar structure. As shown in Fig. 2, the memory stick (110) includes a serial interface (111) for connection to the phone's interface (103). A memory device (113), which is preferably a flash-type memory device, is located aboard the memory stick (110) for data storage.

A register (112) is provided between the memory's serial interface (111) and the memory device (113) to buffer data being transferred to and from the memory device (113). A memory unit controller (114) coordinates and controls the operation of the serial interface (111), the register (112) and the memory device (113).

The connection between the phone interface (103) and the memory stick interface (111) preferably includes three separate signal paths. The first signal path is a clock signal line (106). On this clock signal line (106), the phone unit (100) provides a clock signal to time the transmission of data from the memory (113) to the phone unit (100). This clock signal (106) need only be provided by the phone (100) while the memory stick (110) is transmitting data to the phone (100).

A control line (105) also connects the phone (100) and memory stick (110) units. The control line (105) carries a control signal that activates the memory unit (110) to receive or transmit data.

Finally, a main data line (107) is provided over which data is communicated between the wireless phone

unit (100) and the memory stick unit (110). Commands from the phone unit (100) regarding the storage or retrieval of data in the memory unit (110) are also transmitted to the memory unit (110) on the main data line (107).

Additionally, if the memory unit (110) is busy executing a command from the phone unit (100), a busy signal can be transmitted over the main data line (107) to the phone unit (100) to advise the phone unit (100) of the unavailable status of the memory stick unit (110). Similarly, if the memory unit (110) needs to interrupt the operation of the processor (101) in the phone unit (100), an interrupt signal can be sent over the main data line (107).

Preferably, a resistor (108) is connected between ground and the main data line (107) within the phone unit (100). This resistor (108) may be a pull-up or pull-down resistor that brings the main data line (107) to a predetermined voltage in the absence of any data signal being transmitted on the main data line (107). The predetermined voltage to which the main data line (107) is brought is determined by the operating voltage of the phone unit (100) and the characteristics of the resistor (108).

With the ability to write data to and retrieve data from an unlimited number of memory stick units (110), the wireless telephone (100) can provide an expanded range of functions and feature not available with conventional wireless telephone units. For example, the user may create a phonebook of names, numbers and other information about parties called by the user and store that phonebook in a particular memory stick (110). Alternatively, the phonebook could be created in the phone unit (100) and then moved to the memory unit (110). As will be understood by those of skill in

the art, even with the availability of the memory stick units (110), the phone unit (100) will still preferably retain an internal memory device (not shown) for operation similar to conventional wireless phones.

5 With the user's phonebook database stored in the memory stick (110), the phonebook can be easily transferred to another wireless telephone unit. This may be necessary when replacing or upgrading the phone unit (100) and avoids requiring the user to re-enter
10 all the phonebook information.

 In addition, other preferences and information specific to a given user can be stored in the memory stick (110) for ready transfer to another phone unit (100). For example, a list of recently dialed phone
15 numbers, data access restrictions, passwords, volume level, ring-type and other settings for the phone can be stored in the memory stick (110) and transferred from phone to phone.

 The user's database of information stored in the
20 memory stick unit (110) may also include calendar, schedule or itinerary information. The user may also store memorandum, task lists and other reminders in the memory stick (110). These applications require that the user input device (202) support alphanumeric
25 character entry. As before, all of this data can be readily transferred between phones by transferring the memory stick (110) on which it is stored.

Alternatively, different memory sticks can be designated for different users of the same phone unit.

30 Simple video games can also be stored on the memory stick (110) and played on the phone unit (100) using the display device (208). The user input device (202) would provide the means by which the user controls and plays the game.

Additionally, the wireless telephone (100) can now be used as a personal audio device to play music or other audio programming for the user. For this purpose, as shown in Fig. 3, the phone unit (100) may
5 include a connection (303) to a headset (302). The headset may be any of a variety of configurations including two speakers connected by a headband that rests over the user's head; two speakers that are inserted and held in the user's ears; or one or two
10 speakers that are hooked to, clipped to or hung from the user's ears. The headset (302) may also include a microphone so as to be usable to conduct telephone calls using the wireless telephone unit (100).

With the headset (302) provided as a means of
15 outputting an audio signal that a user can listen to, the wireless phone unit (100) can store music in a digital format in the electronic memory of the memory stick (110). It is estimated that the quantity of music available on a typical compact disc could be
20 recorded on a single memory stick (110) for use with the phone (100). The phone (100) can then simply retrieve the recorded audio signal from the memory stick (110) and reproduce the audio signal as sound through the headset (302).

25 The music or other audio programming can be obtained and recorded in the memory stick (110) from a number of sources. For example, the phone (100) may be connected to an external source for an audio signal through a port or connector (310). The port or
30 connector (310) could include a wire-line interface to the phone (100). Alternatively, the port or connector (310) could be a wireless transceiver, e.g. optical or radio, so that the phone (100) can communicate wirelessly with an external audio signal source.

Through this connection, an audio signal is provided to the wireless phone unit (100) that can be recorded in the memory stick (110). The external audio signal source may be, for example, a personal computer, a home stereo, a personal stereo, a compact disc player, a mini-disc player, a tape player or any other electronic device outputting an audio signal.

5 Preferably, the audio stored in the memory stick is compressed using MP3 or some other compression algorithm to maximize storage space.

Alternatively, the wireless telephone unit (100) may include an AM/FM commercial-band radio tuner (300) with which commercial broadcasts of music and other audio programming can be received and stored in the memory stick (110). The user could also listen directly to the received radio broadcast through the headphones (302) without storing the audio in the memory stick (110).

15 An antenna (301) is illustrated in Fig. 3 to enable the tuner (300) to receive broadcast radio signals. However, the tuner (300) may alternatively use the same antenna (209) with which the wireless telephone unit communicates with the wireless telephone infrastructure.

25 Music or other audio programming may also be transmitted to the phone unit (100) over the wireless telephone infrastructure of the wireless telephone service provider and stored in the memory stick unit (110). However, this may require significant amounts of expensive air-time.

The user may also record phone conversations or portions thereof in a memory stick (110). The user input device (202) can be used to selectively control when phone conversation is recorded. Similarly, speaking through the microphone (213) of the phone

(100), the user may record voice memos in the memory stick (110). Additionally, the memory stick (110) can be used to record incoming voice messages when the user is unable to take a phone call. In this way, the
5 memory stick (110) allows the phone unit (100) to including an answering machine or voice mail function.

With or without the headset (302), audio recorded in the memory stick (110) could be retrieved and transduced into sound using the speaker (210) of the
10 phone unit (100). This may be appropriate for applications where the quality of the sound is not particularly at issue, such as when retrieving a voice recording of a phone conversation, voice mail or voice memo.

15 Finally, with the connection (310) to external electronic equipment, the wireless phone unit (100) and memory stick (110) can be used to transfer digital photographs, images (such as facsimiles) and text files. For example, the user may create a digital
20 picture with a digital camera, or an electronic image, like a facsimile, with an optical scanner. The user may also create a document or other computer file using a personal computer. Any of these data items can be uploaded over the link (310) from their originating
25 device to the phone unit (100). The phone (100) can store the data item in a memory stick (110) and then transmit the data item to a recipient over the wireless telephone infrastructure.

Conversely, the phone may receive any of the
30 described data items over the wireless telephone infrastructure and store it in a memory stick (110). The data item can then be downloaded over the connection (310) for use on a computer or other electronic equipment.

Additionally, a digital camera, optical scanner or personal computer may include a serial interface to which the memory stick (110) can be directly connected. In this way, the desired data item can be transferred
5 directly to the memory stick (110). The memory stick (110) is then connected to the phone unit (100) to transfer the data item over the wireless telephone infrastructure.

As before, the port or connector (310) or any other
10 interface to the phone unit (100) could be a wire-line interface to the phone (100) or a wireless transceiver, e.g. optical or radio, so that the phone (100) can communicate wirelessly with an external data source.

The preceding description has been presented only
15 to illustrate and describe the invention. It is not intended to be exhaustive or to limit the invention to any precise form disclosed. Many modifications and variations are possible in light of the above teaching.

The preferred embodiment was chosen and described
20 in order to best explain the principles of the invention and its practical application. The preceding description is intended to enable others skilled in the art to best utilize the invention in various embodiments and with various modifications as are
25 suited to the particular use contemplated. It is intended that the scope of the invention be defined by the following claims.

WHAT IS CLAIMED IS:

1. A wireless telephone unit comprising:

5 one or more detachable memory units, each of which includes a first interface for selectively connecting said detachable memory unit to said wireless telephone unit; and

10 a port on said wireless telephone unit for receiving one of said detachable memory units, said port comprising a second interface for interfacing with said first interface of one of said detachable memory units;

15 wherein each of said detachable memory units comprises a memory device in which data from said wireless telephone can be stored and retrieved via the connection of said first and second interfaces.

2. The wireless telephone unit of claim 1,
20 further comprising a commercial-band radio tuner for receiving broadcast radio signals; wherein said telephone unit selectively records audio programming from said broadcast radio signals in one of said detachable memory units connected to said wireless
25 telephone unit.

3. The wireless telephone unit of claim 2,
further comprising a headset for listening to said audio programming recorded in said detachable memory
30 unit connected to said wireless telephone unit.

4. The wireless telephone unit of claim 1,
further comprising a user input device with which a user can control said wireless telephone unit to
35 selectively record telephone conversations conducted on

said wireless telephone unit or voice memos in one of said detachable memory units connected to said wireless telephone unit.

5 5. The wireless telephone unit of claim 1, wherein said wireless telephone unit records voice mail messages, received when a user is unavailable to take an incoming phone call, in one of said detachable memory units connected to said wireless telephone unit.

10

 6. The wireless telephone unit of claim 1, further comprising a connector for connecting said wireless telephone unit to an external audio signal source, wherein an audio signal representing audio
15 programming is received from said external audio signal source and recorded by said wireless telephone unit in one of said detachable memory units connected to said wireless telephone unit.

20 7. The wireless telephone unit of claim 6, further comprising a headset for listening to said audio programming recorded in said detachable memory unit connected to said wireless telephone unit.

25 8. The wireless telephone unit of claim 1, further comprising a connector for connecting said wireless telephone unit to an external electronic device containing an image or text data item, wherein said wireless telephone unit receives said data item
30 through said connector and stores said data item in one of said detachable memory units connected to said wireless telephone unit.

 9. The wireless telephone unit of claim 8,
35 wherein said wireless telephone unit wirelessly

transmits said data item from said detachable memory unit connected to said wireless telephone unit over a wireless telephone infrastructure.

5 10. The wireless telephone unit of claim 1, wherein said wireless telephone unit wirelessly receives an image or text data item over a wireless telephone infrastructure and stores said data item in one of said detachable memory units connected to said
10 wireless telephone unit.

11. The wireless telephone unit of claim 10, further comprising a connector through which said wireless telephone unit downloads said data item from
15 said detachable memory unit to external electronic equipment.

12. A method of managing data with a wireless telephone unit comprising recording data transmitted
20 from said wireless telephone unit in one or more detachable memory units, each of which includes a first interface for selectively connecting said detachable memory unit to a port on said wireless telephone unit, said port comprising a second interface for interfacing
25 with said first interface of one of said detachable memory units.

13. The method of claim 12, further comprising entering said data through a user input device of said
30 wireless telephone unit.

14. The method of claim 13, further comprising:
disconnecting said detachable memory unit in which said data is stored from the original wireless phone
35 unit; and

plugging said detachable memory unit into a second wireless telephone unit to effectively transfer said data from said original wireless telephone unit to said second wireless telephone unit.

5

15. The method of claim 12, further comprising:
receiving broadcast radio signals with a commercial-band radio tuner in said wireless telephone unit; and

10

selectively recording audio programming from said broadcast radio signals in one of said detachable memory units connected to said wireless telephone unit.

16. The method of claim 15, further comprising
15 listening to said audio programming recorded in said detachable memory unit through a headset connected to said wireless telephone unit.

17. The method of claim 12, further comprising
20 selectively recording telephone conversations conducted on said wireless telephone unit or voice memos in one of said detachable memory units connected to said wireless telephone unit.

25 18. The method of claim 12, further comprising recording voice mail messages, received when a user is unavailable to take an incoming phone call, in one of said detachable memory units connected to said wireless telephone unit.

30

19. The method of claim 12, further comprising:
connecting said wireless telephone unit to an external audio signal source;

receiving an audio signal representing audio
35 programming from said external audio signal source; and

recording said audio programming in one of said detachable memory units connected to said wireless telephone unit.

5 20. The method of claim 19, further comprising listening to said audio programming recorded in said detachable memory unit with a headset connected to said wireless telephone unit.

10 21. The method of claim 12, further comprising:
 connecting said wireless telephone unit to an
 external electronic device containing an image or text
 data item;
 receiving said data item through said connection;
15 and
 storing said data item in one of said detachable
 memory units connected to said wireless telephone unit.

20 22. The method of claim 21, further comprising
 wirelessly transmitting said data item from said
 detachable memory unit over a wireless telephone
 infrastructure using said wireless telephone unit.

25 23. The method of claim 12, further comprising:
 wirelessly receiving an image or text data item
 over a wireless telephone infrastructure; and
 storing said data item in one of said detachable
 memory units connected to said wireless telephone unit.

30 24. The method of claim 23, further comprising:
 connecting said wireless telephone to external
 electronic equipment; and
 downloading said data item from said detachable
 memory unit to said external electronic equipment.

35

25. A wireless telephone unit comprising:

one or more detachable memory means, each of which includes a first interface means for selectively connecting said detachable memory means to said wireless telephone unit; and

a port on said wireless telephone unit for receiving one of said detachable memory means, said port comprising a second interface means for interfacing with said first interface means of one of said detachable memory means;

wherein each of said detachable memory means comprise a memory device in which data from said wireless telephone can be stored and retrieved via the connection of said first and second interface means.

26. The wireless telephone unit of claim 25, further comprising means for receiving broadcast radio signals, wherein said telephone unit selectively records audio programming from said broadcast radio signals in one of said detachable memory means connected to said wireless telephone unit.

27. The wireless telephone unit of claim 26, further comprising means for listening to said audio programming recorded in said detachable memory means connected to said wireless telephone unit.

28. The wireless telephone unit of claim 25, further comprising means for selectively controlling said wireless telephone unit to record telephone conversations conducted on said wireless telephone unit or voice memos in one of said detachable memory means connected to said wireless telephone unit.

29. The wireless telephone unit of claim 25,
further comprising means for recording records voice
mail messages, received when a user is unavailable to
take an incoming phone call, in one of said detachable
5 memory means connected to said wireless telephone unit.

30. The wireless telephone unit of claim 25,
further comprising a connecting means for connecting
said wireless telephone unit to an external audio
10 signal source, wherein an audio signal representing
audio programming is received from said external audio
signal source and recorded by said wireless telephone
unit in one of said detachable memory means connected
to said wireless telephone unit.

15

31. The wireless telephone unit of claim 30,
further comprising means for listening to said audio
programming recorded in said detachable memory unit
connected to said wireless telephone unit.

20

32. The wireless telephone unit of claim 25,
further comprising connecting means for connecting said
wireless telephone unit to an external electronic
device containing an image or text data item, wherein
25 said wireless telephone unit receives said data item
through said connecting means and stores said data item
in one of said detachable memory means connected to
said wireless telephone unit.

30

33. The wireless telephone unit of claim 32,
wherein said wireless telephone unit wirelessly
transmits said data item from said detachable memory
means connected to said wireless telephone unit over a
wireless telephone infrastructure.

35

34. The wireless telephone unit of claim 25,
wherein said wireless telephone unit wirelessly
receives an image or text data item over a wireless
telephone infrastructure and stores said data item in
5 one of said detachable memory means connected to said
wireless telephone unit.

35. The wireless telephone unit of claim 34,
further comprising connecting means for downloading
10 said data item from said detachable memory means
connected to said wireless telephone unit to external
electronic equipment.

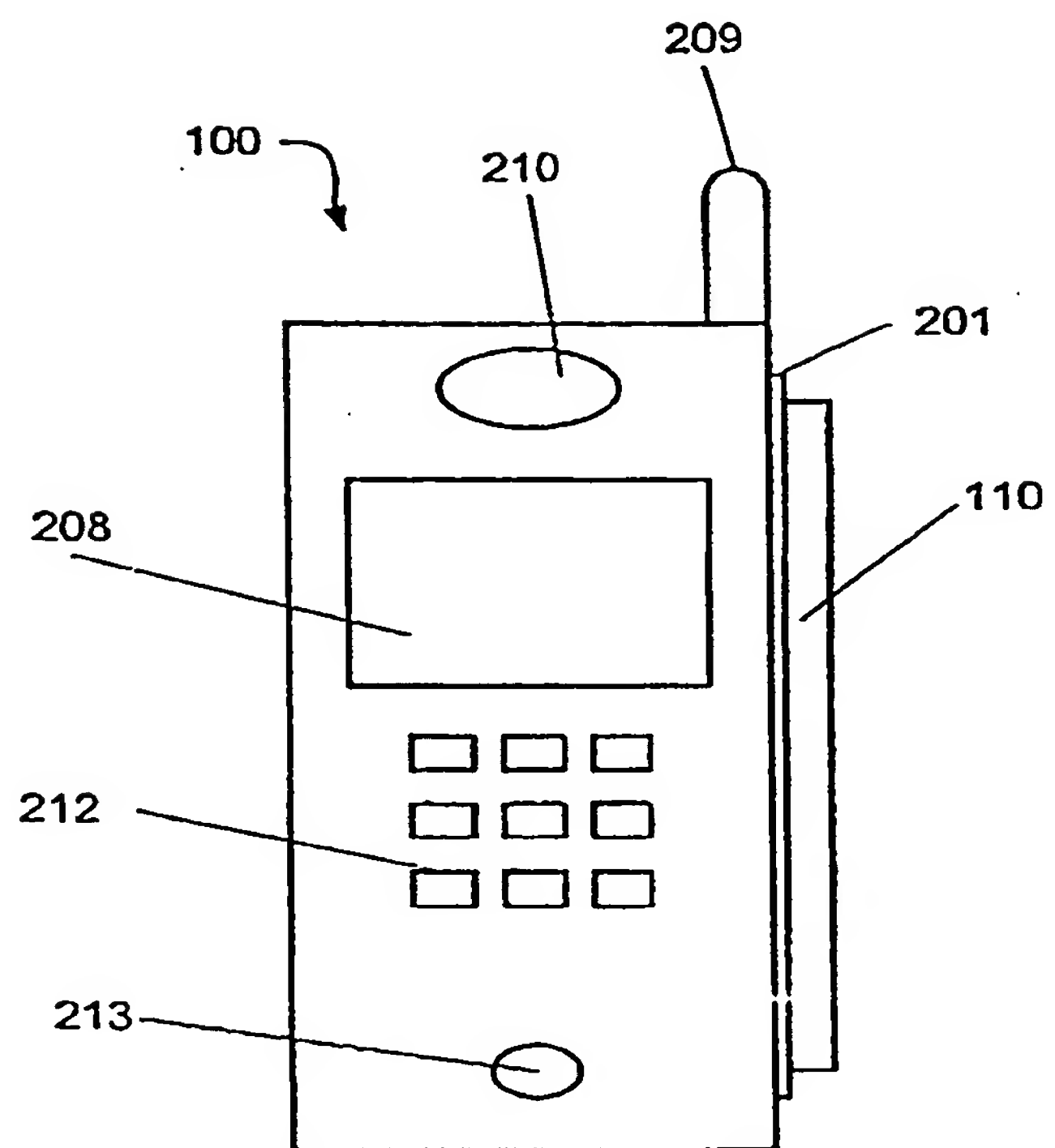


Fig. 1

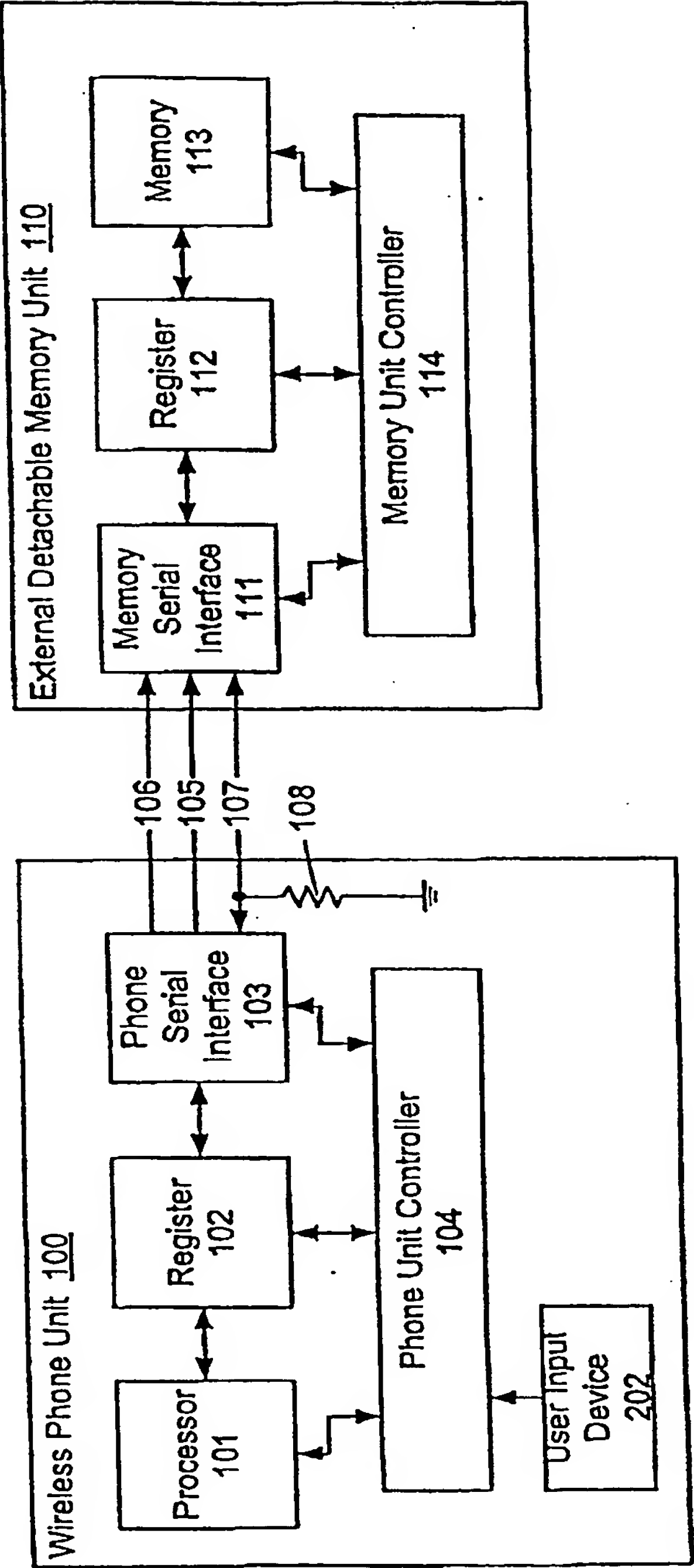


Fig. 2

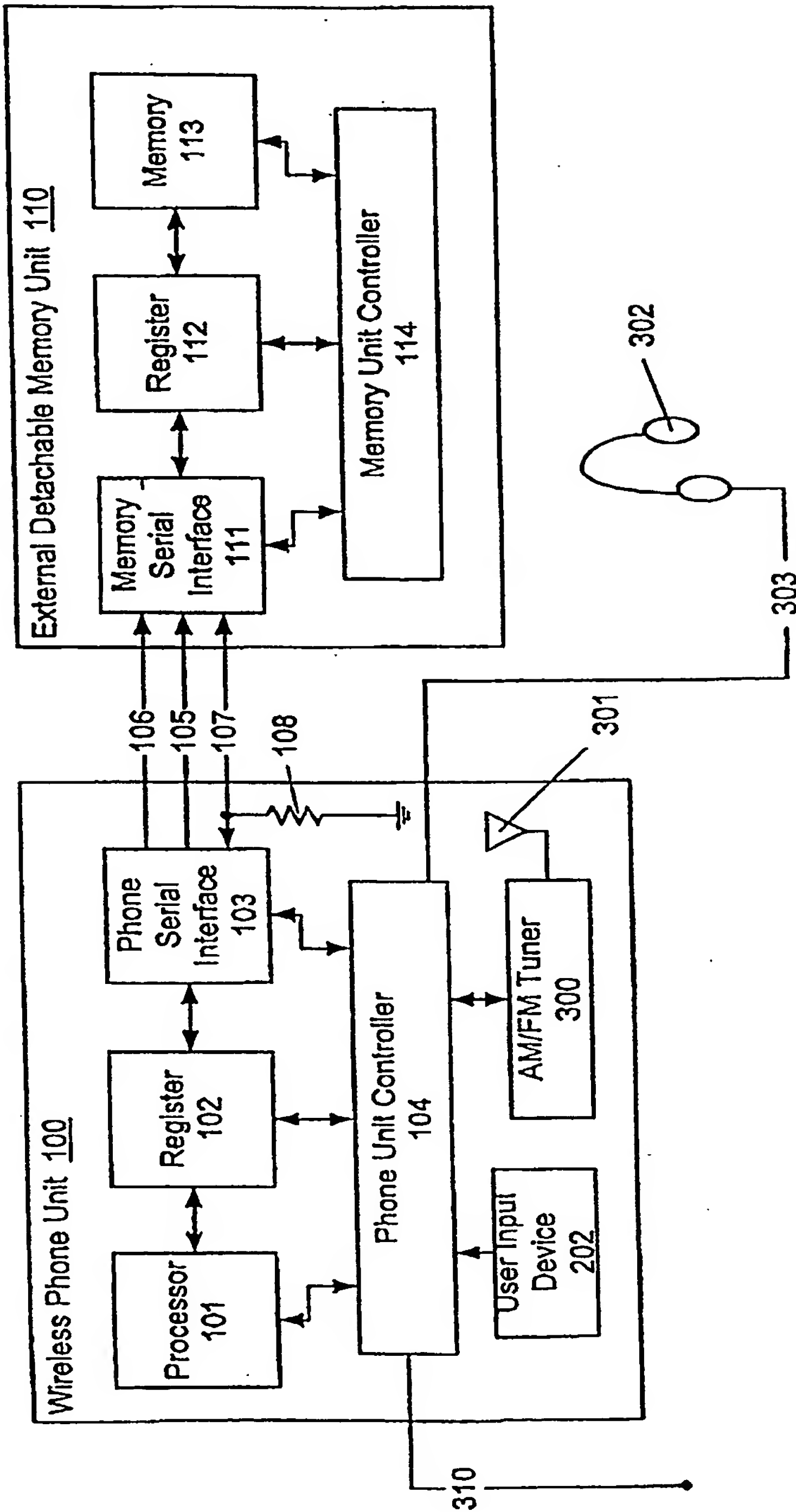


Fig. 3

INTERNATIONAL SEARCH REPORT

International Application No

PC1/US 00/32819

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 H04M1/725

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04M

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 99 43136 A (ERICSSON GE MOBILE INC) 26 August 1999 (1999-08-26)	1-3, 6-8, 12, 15, 16, 19-21, 25-27, 30-32
A	page 4, line 19 -page 10, line 2; figures 1-7	4, 5, 28, 29
X	WO 99 60713 A (SWISSCOM AG (CH)) 25 November 1999 (1999-11-25)	1-3, 12, 13, 25-27
A	page 1, line 1 - line 17 page 5, line 3 -page 18, line 2; figure 1	6-11, 14-16, 19-24, 28-33

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

26 April 2001

Date of mailing of the international search report

07/05/2001

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 00/32819

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 99 46727 A (ERICSSON INC) 16 September 1999 (1999-09-16) page 3, line 20 -page 7, line 26; figures 1-6 ---	1,12,25 4,5,13, 14,17, 18,28,29
X	US 5 815 426 A (JIGOUR ROBIN J ET AL) 29 September 1998 (1998-09-29) column 4, line 23 - line 53 column 6, line 15 - line 67; figure 3 column 16, line 41 -column 18, line 26 ---	1,4, 12-14, 17,25,28
X	US 5 335 276 A (BIRDWELL ET AL) 2 August 1994 (1994-08-02) column 3, line 7 - line 55 column 6, line 55 -column 7, line 41; figure 1 column 11, line 59 - line 68 column 15, line 28 - line 68; figure 10 ---	1,4,5, 12,13, 17,18, 25,28,29
X	US 5 819 069 A (CHALLA NAGESH ET AL) 6 October 1998 (1998-10-06) column 3, line 45 - line 63; figures 1,5 column 10, line 65 -column 11, line 50; figure 6 -----	1,4,12, 17,25,28

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 00/32819

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 9943136	A	26-08-1999	AU 2220699 A BR 9908009 A EP 1057312 A NO 20004149 A	06-09-1999 24-10-2000 06-12-2000 18-10-2000
WO 9960713	A	25-11-1999	AU 7203598 A EP 1080539 A	06-12-1999 07-03-2001
WO 9946727	A	16-09-1999	AU 3078699 A	27-09-1999
US 5815426	A	29-09-1998	US 5877975 A AU 4066297 A US 6026007 A WO 9807098 A US 6175517 B	02-03-1999 06-03-1998 15-02-2000 19-02-1998 16-01-2001
US 5335276	A	02-08-1994	NONE	
US 5819069	A	06-10-1998	NONE	